

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KAZUO SANADA and TSUTOMU TAKATSUKA

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Appeal No. 2002-1856  
Application No. 09/255,699

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HEARD: March 4, 2003

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Before COHEN, STAAB and McQUADE, Administrative Patent Judges.  
McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Kazuo Sanada et al. originally took this appeal from the final rejection of claims 1, 7, 10, 12, 18 and 19. As the appellants have since canceled claim 7,<sup>1</sup> the appeal now involves claims 1, 10, 12, 18 and 19, all of the claims currently pending

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THE INVENTION

The invention relates to a liquid spraying apparatus designed for use in a photographic image forming machine.

Representative claims 1 and 10 read as follows:

1. A liquid spraying apparatus in which a nozzle plate is provided at a portion of a lower wall surface of a spray tank which stores a liquid therein, the nozzle plate has a row of nozzles made up of a plurality of nozzle holes through which the liquid is sprayed when the nozzle plate is reciprocated, comprising:

at least a portion of the spray tank being formed from a transparent member;

a monitoring camera which views an internal portion of said spray tank from at least a side end wall surface of said spray tank, through said transparent member;

wherein said internal portion of said spray tank is photographed by said camera to determine an existence of residual bubbles in said spray tank.

10. A liquid spraying apparatus comprising:

a nozzle plate provided at a portion of a lower wall surface of a spray tank which stores a liquid therein, the nozzle plate having a row of nozzles made up of a plurality of nozzle holes through which the liquid is sprayed when the nozzle plate is reciprocated;

bubble detecting means which, when said spray tank is filled with the liquid, detect whether or not residual bubbles exist inside said spray tank;

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#### THE PRIOR ART

The references relied on by the examiner as evidence of obviousness are:

|                              |           |               |
|------------------------------|-----------|---------------|
| Houser                       | 3,701,476 | Oct. 31, 1972 |
| Robertson et al. (Robertson) | 5,487,378 | Jan. 30, 1996 |
| Ciardella et al. (Ciardella) | 5,505,777 | Apr. 9, 1996  |
| Sander et al. (Sander)       | 5,991,019 | Nov. 23, 1999 |

#### THE REJECTIONS

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ciardella in view of Houser.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ciardella in view of Houser and Robertson.

Claims 1, 18 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ciardella in view of Houser and Sander.

Attention is directed to the appellants' main and reply briefs (Paper Nos. 20 and 22) and to the examiner's answer (Paper No. 21) for the respective positions of the appellants and the examiner regarding the merits of these rejections.

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Ciardella, the examiner's primary reference, discloses "a computer controlled system for high speed surface mount adhesive placement in circuit board production" (column 1, lines 18 through 20). In general, the system comprises a viscous adhesive dot generator supported for motion along X, Y and Z axes, a circuit board conveyor disposed beneath the dot generator, a video camera and vision circuit for monitoring dot size and location and a computer which interfaces with the foregoing elements to operate the assembly line. The viscous adhesive dot generator 12, which the examiner likens to the claimed liquid spraying apparatus, comprises a nozzle 70, a fluid feed conduit 72, a drop generation chamber 74, an elastomeric sealing gasket 76, a syringe 84, an impact hammer 104, a solenoid 112, a controller 120, a heater ring 132 and a strain gauge 144. These dot generator components cooperate as shown in Figures 3 and 4 and described at column 8, line 15 et seq. Noting that air bubbles in the adhesive material within the dot generator can adversely effect the volume and shape of the dots dispensed therefrom, Ciardella processes the strain gauge signals to detect

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As conceded by the examiner (see pages 3 and 4 in the answer), Ciardella's dot generator does not respond to the limitations in independent claims 1, 10, 18 and 19 requiring a nozzle plate having "a row of nozzles made up of a plurality of nozzle holes," or to the additional limitations in claims 1, 18 and 19 requiring a "monitoring camera" for determining the existence of residual bubbles in the spray tank. The Ciardella system embodies a nozzle 70 ostensibly having but a single nozzle hole and a bubble detector in the form of strain gauge 144. To cure these shortcomings, the examiner turns to Houser and Sander.

Houser discloses a jet drop recording/printing head assembly 10 (see Figure 1) comprising a fluid supply manifold 20 for holding an electrically conductive recording/printing fluid, an orifice plate 18 containing two rows of orifices 26 welded to the manifold, a stimulator 28 for vibrating the orifice plate, and a charge ring plate 50 and a pair of catchers 54 disposed beneath the orifice plate. In use (see Figure 2), the stimulator vibrates the orifice plate causing drops of conductive printing fluid to issue from the orifices and pass through the charge ring

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Sander discloses a bubble chamber spectrometer 10 for detecting the presence and concentration of an analyte in a solvent. In Sander's words,

[a] bubble chamber [12] receives a solution containing an analyte to be detected. A laser [32] is adapted to direct an output laser beam through the bubble chamber, where the laser is selected to be absorbed by the analyte and to be transmitted by the solvent. A video camera [44] is adapted to display passage of said laser beam through said bubble chamber so that bubbles in the solvent arising from energy deposition in the analyte can be counted to characterize the analyte both quantitatively and qualitatively [column 2, lines 2 through 11].

In proposing to combine Ciardella with Houser and Sander, the examiner submits that it would have been obvious "to have replaced the nozzle of Ciardella et al. with the reciprocated nozzle plate of Houser to increase the spray pattern" (answer, page 3 and page 4), and "to have replaced the bubble detection means of Ciardella et al. with the bubble detection means of Sander et al. to view the bubbles" (answer, pages 4 and 5).

In short, there is nothing in the fair teachings of Ciardella, Houser and Sander which would have motivated one of

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refill calibration in addition to bubble detection (see Ciardella at column 7, lines 27 through 60; and column 9, lines 33 through 43), with Sander's spectrometer video camera 44. The only suggestion for selectively combining these disparate teachings in the manner proposed by the examiner stems from hindsight knowledge impermissibly derived from the appellants' disclosure.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 10 as being unpatentable over Ciardella in view of Houser, or the standing 35 U.S.C. § 103(a) rejection of claims 1, 18 and 19 as being unpatentable over Ciardella in view of Houser and Sander.

As Robertson's disclosure of a pharmaceutical inhaler does not overcome the deficiencies of Ciardella and Houser relative to parent claim 10, we also shall not sustain the standing 35 U.S.C. § 103(a) rejection of dependent claim 12 as being unpatentable over Ciardella in view of Houser and Robertson.<sup>2</sup>

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SUMMARY

The decision of the examiner to reject claims 1, 10, 12, 18  
and 19 is reversed.

REVERSED

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|-----------------------------|---|-----------------|
| IRWIN CHARLES COHEN         | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) | BOARD OF PATENT |
| LAWRENCE J. STAAB           | ) | APPEALS         |
| Administrative Patent Judge | ) | AND             |
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